

**Field Modification Form**  
**Lower Passaic River Restoration Project**  
**Remedial Investigation**  
**Project No: 60145884**



<b>Field Modification Number: FM-120830-1</b>															
<b>Document (plan or SOP title and date)</b> <i>Quality Assurance Project Plan for Lower Passaic River Restoration Project: Periodic Bathymetric Surveys, Rev. 2, May 2010</i>															
<b>Activity:</b> Performing Single Beam Bathymetric Surveys in Shallow Areas Located Outside the Limits of the Multi Beam Bathymetric Surveys in the Lower 14 Miles of the Passaic River															
<p><b>Proposed Modification:</b> The Periodic Bathymetric Surveys Quality Assurance Project Plan (QAPP) (AECOM, 2010) is modified by this Field Modification Form to include performance of single beam bathymetric surveys in shallow areas located outside the limits of the multi beam surveys in selected areas in the lower 14 miles of the Passaic River. Multi beam surveys are limited to areas with water depths greater than approximately 6 feet (measured as water depth not NGVD), due to beam limitations and risk of damage to the multi beam transducer head. Single beam surveys will fill in areas between approximately 6 feet water depth and 2 feet water depth.</p> <p>Nine areas in the lower 14 miles of the Passaic River have been identified for single beam surveying where shallow sediments are present with elevations shallower than 6 feet water depth. Single beam surveys will be performed of each of these areas. Figures 1 and 2 attached to this field modification form show the locations of these nine areas. Figure 1 shows the entire Lower Passaic River Study area and the location of each area. Figure 2 shows the limits of the single beam survey in each area. The single beam survey areas are identified on these figures by their longitudinal extent as described by river mile (RM).</p> <p>The single beam surveys will consist of transects that will extend from the 2 feet depth pass the limits of the multi beam survey (~6 feet water depth) and will extend into the multi beam survey area (minimum 100 ft.) to provide overlap of the surveys which will allow comparison and quality control (QC) checks of the surveys. Surveys shall be conducted as close to high tide as possible in order accomplish this goal. The single beam transects will be spaced approximately 50 feet apart.</p> <p>In 2007 single beam surveys were performed by the Cooperating Parties Group (CPG) in five of the areas and part of a sixth area to be surveyed in 2012. In 2007 the single beam transects were spaced approximately 100 feet apart. The 2012 single beam transects will replicate the 2007 transects to the extent possible. To achieve the 50 foot spacing single beam transects will also be performed midway between the 2007 single beam transects. In the sixth area where the 2007 single beam survey covered a portion of the 2012 single beam survey area, the pattern established in the 2007 single beam survey area will be expanded into the remainder of the 2012 single beam survey area.</p> <p>In two of the remaining three 2012 survey areas, the RM 10.9 Removal Area and the mouth of Third River, a single beam survey was performed by the CPG in 2011. The 2012 single beam transects will replicate the 2011 single beam transects in these two areas to the extent possible.</p> <p>The CPG has not performed single beam surveys in the remaining 2012 survey area (RM 9.6 – 10.2). In this area, single beam transects will be spaced at approximately 50 feet apart.</p> <p>The following table identifies for each single beam survey area if and when the CPG has performed a single beam survey that will be replicated during the 2012 single beam survey to the extent possible.</p> <table border="1"> <thead> <tr> <th>Single Beam Survey Area</th><th>Date of CPG Single Beam Survey, if previously performed</th></tr> </thead> <tbody> <tr> <td>RM 0.00 - 0.88</td><td>2007 – 100 ft. spacing – Northern portion of the survey area</td></tr> <tr> <td>RM 1.80 - 3.05</td><td>2007 – 100 ft. spacing</td></tr> <tr> <td>RM 3.50 - 4.32</td><td>2007 – 100 ft. spacing</td></tr> <tr> <td>RM 6.60 - 7.10</td><td>2007 – 100 ft. spacing</td></tr> <tr> <td>RM 7.10 - 7.50</td><td>2007 – 100 ft. spacing</td></tr> <tr> <td>RM 7.50 - 7.80</td><td>2007 – 100 ft. spacing</td></tr> </tbody> </table>		Single Beam Survey Area	Date of CPG Single Beam Survey, if previously performed	RM 0.00 - 0.88	2007 – 100 ft. spacing – Northern portion of the survey area	RM 1.80 - 3.05	2007 – 100 ft. spacing	RM 3.50 - 4.32	2007 – 100 ft. spacing	RM 6.60 - 7.10	2007 – 100 ft. spacing	RM 7.10 - 7.50	2007 – 100 ft. spacing	RM 7.50 - 7.80	2007 – 100 ft. spacing
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Single Beam Survey Area	
RM 9.55 - 10.16	None
RM 10.55 – 11.00	2011 RM 10.9 Survey – 50 ft. spacing
RM11.20 and Third River	2011 RM 10.9 Survey – 50 ft. spacing

The Periodic Bathymetric Surveys QAPP is modified by this Field Modification Form as described below:

The Task Manager will be Doug Simmons of AECOM.

Worksheets 10 (Problem Definition) and 11 (Project Quality Objectives/Systematic Planning Process Statements) are modified as follows:

Develop detailed bathymetry data that covers the full extent of selected shallow sediment deposits outside the limits of the multi beam surveys to establish baseline data for potential evaluation of sediment infilling and/or erosion. Sediment infilling and erosion can be evaluated in part by comparing river bottom depths between periodic bathymetric survey events. The results offer a line of evidence to evaluate sediment stability and the rate of sediment infilling or erosion.

Given the error and uncertainty inherent in bathymetric data and low rates of infilling:

- Uncertainty in the depth-difference data (previously assumed to be  $\pm 1$  ft [AECOM 2010]) may not allow the resolution to quantify sediment elevation changes in these areas; and,
- Low sedimentation rates (<1 inch/year) in areas identified by USEPA as being in quasi-equilibrium may not be discernible in the resolution of the data.

The data may only be sufficient to provide a qualitative or semi-quantitative evaluation of net changes over large areas, and may not support evaluation of local changes.

The schedule in QAPP Worksheet 16 is modified as follows:

Activities	Organization	Dates (MM/DD/YY)		Deliverable	Deliverable Due Date
		Anticipated Date(s) of Initiation	Anticipated Date of Completion		
Planning of Bathymetry Survey	de maximis, inc./AECOM/GBA	August 2012	August 2012	Field Modification Form	August 2012
Performance of Bathymetry Survey	AECOM/GBA	August 2012	September 2012	Raw data files	Delivered along with the processed data
Processing of Survey Data	GBA	October 2012	November 2012	Processed data files, supporting files, and contour maps of elevation of the sediment surface within the study area	Approximately 30 days following completion of field survey
Quality Review and Evaluation of Survey Data	de maximis, inc./AECOM	November 2012	December 2012	Bathymetry Survey Report	December 2012
Preparation and Delivery of Survey Summary Report	de maximis, inc. / AECOM	November 2012	December 2012	Survey Summary Report	December 2012

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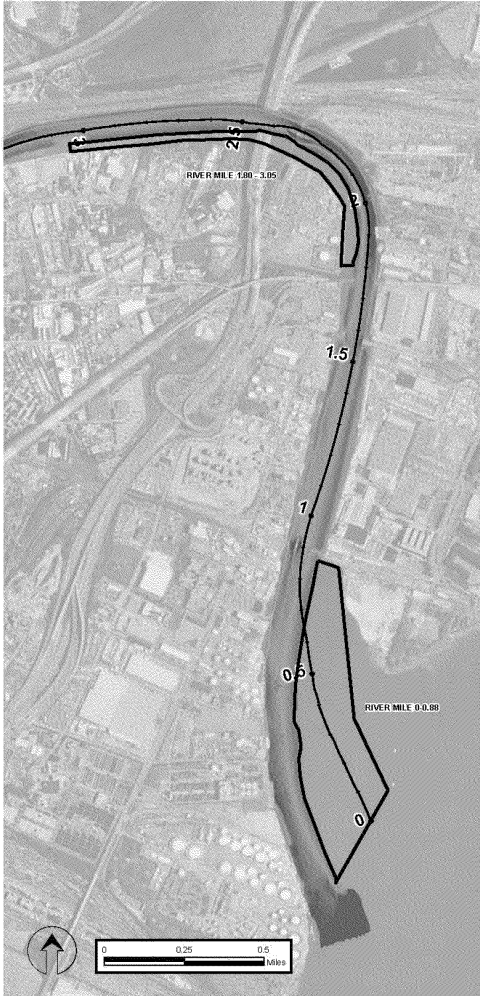
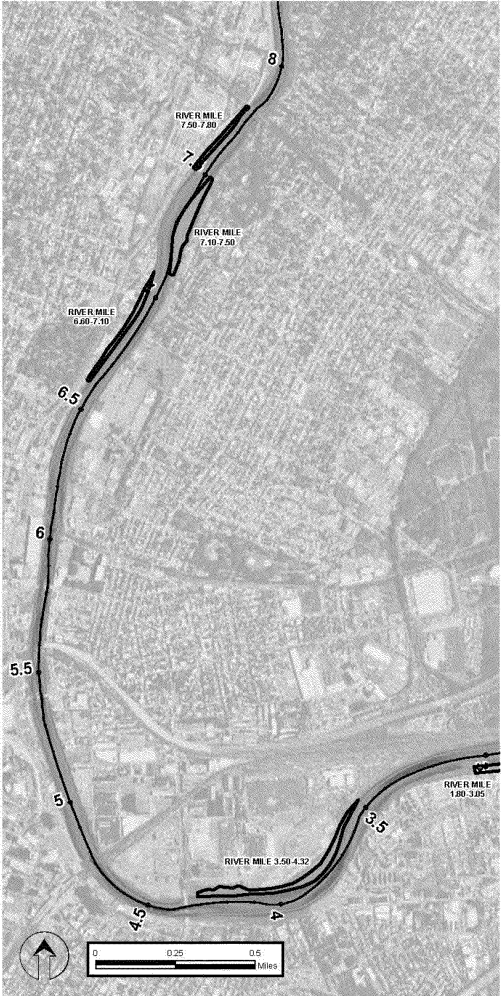
<b>Effective Date:</b> August 30, 2012	
<b>Rationale:</b> This Field Modification Form provides an updated schedule and data quality objective for the 2012 single beam surveys requested by USEPA.	
<b>Submitted by:</b> Doug Simmons	<b>Date:</b> August 30, 2012
<b>Project QA Manager Approval:</b> 	<b>Date:</b> August 30, 2012
<b>Task Manager Approval:</b> 	<b>Date:</b> August 30, 2012

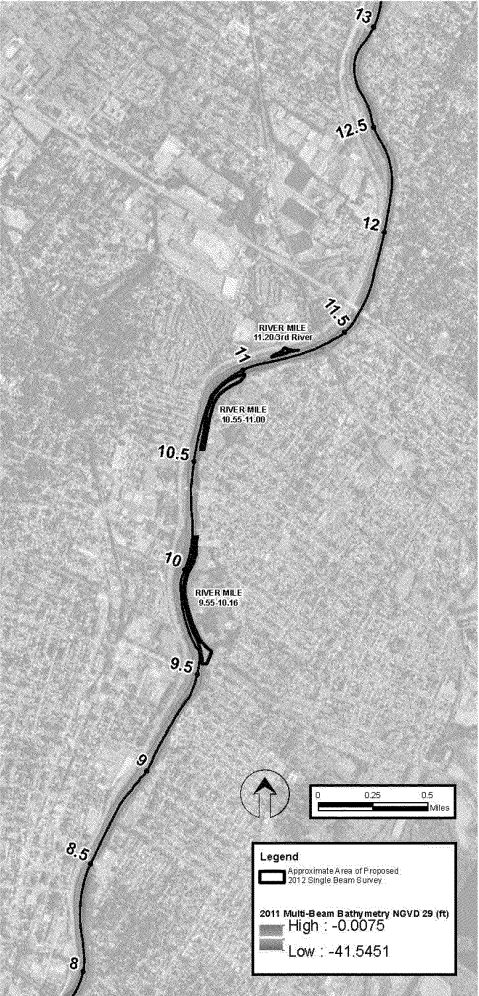
Figure 1: Location of Single Beam Surveys



RIVER MILE 0-3



RIVER MILE 3-8



RIVER MILE 8-13



Figure 2: Survey Areas of Single Beam Surveys

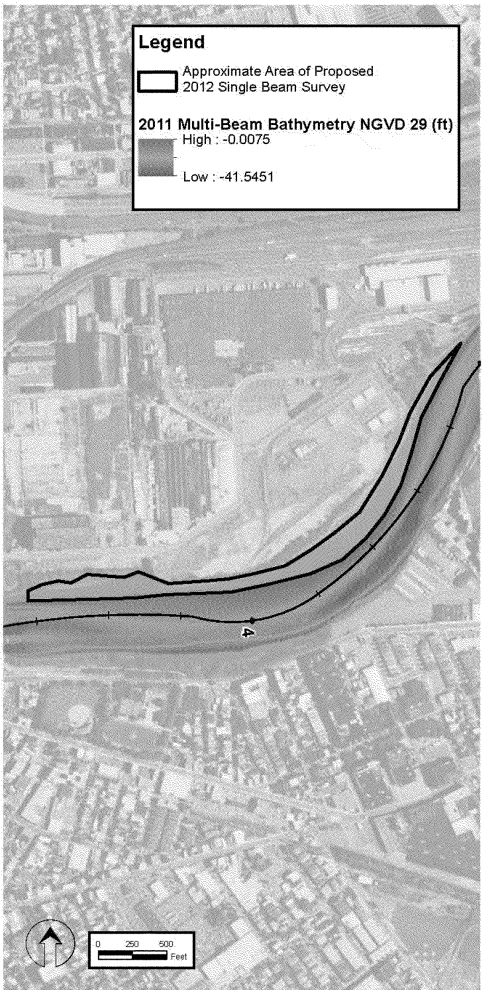


Figure 2: Survey Areas of Single Beam Surveys (continued)

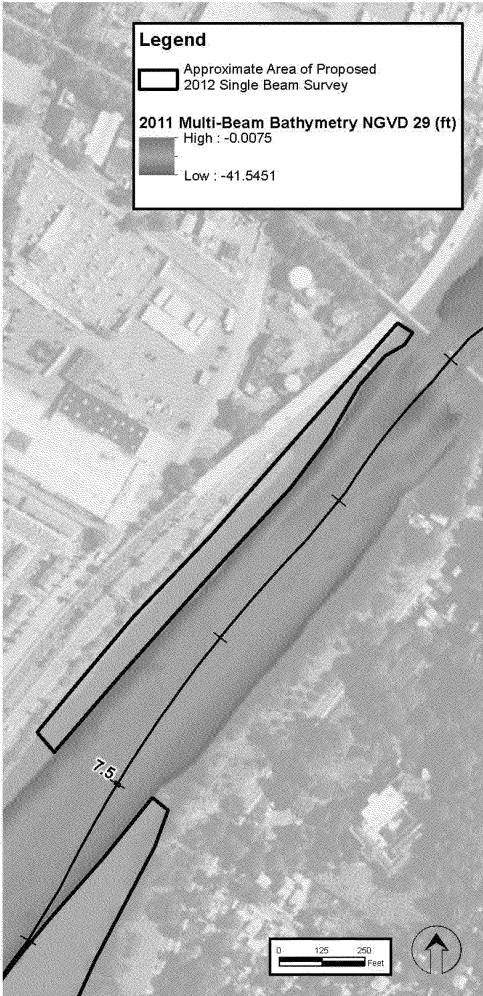
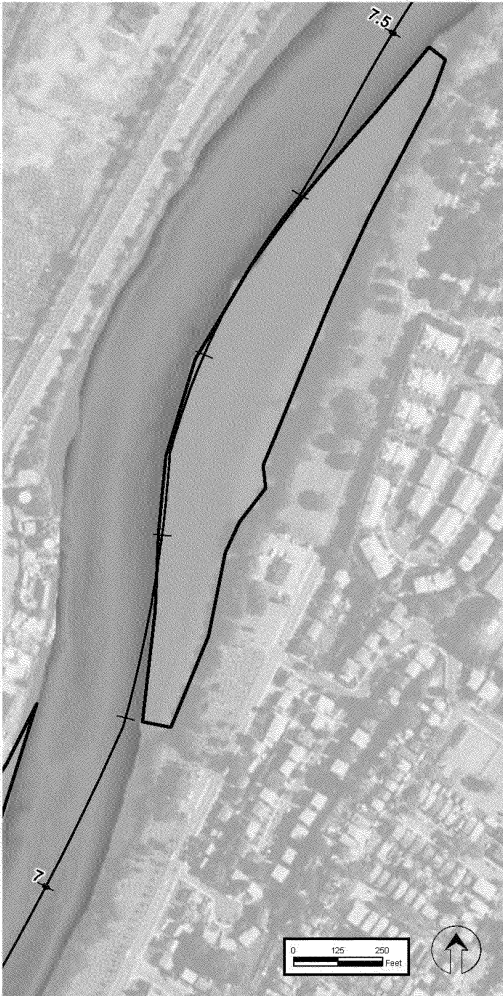
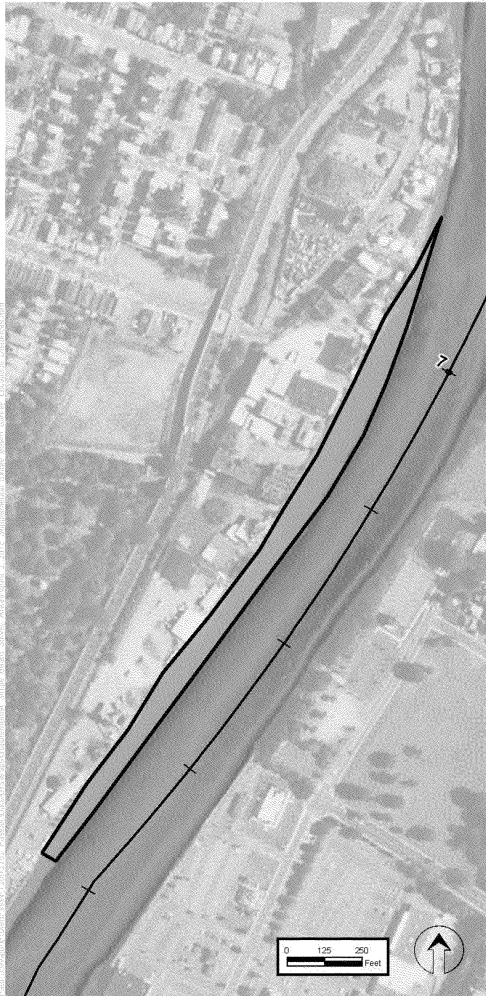


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